



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,097	04/19/2004	Richard N. Codos	010758-9012-00	1465

7590

10/17/2006

Martin L. Stern
Michael Best & Friedrich LLP
Two Prudential Plaza
180 North Stetson Avenue, Suite 2000
Chicago, IL 60601

EXAMINER

TRAN, LY T

ART UNIT	PAPER NUMBER
----------	--------------

2853

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/827,097

Applicant(s)

CODOS, RICHARD N.

Examiner

Ly T. TRAN

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,9,12,27,31,32,34-40 and 45-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 36 and 37 is/are allowed.
- 6) ☒ Claim(s) 1,9,12,27,31,32,34, 38, 39 and 45-53 is/are rejected.
- 7) ☒ Claim(s) 35 and 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/21/06, 9/25/06
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 9, 12, 27, 31, 34, 39, 48, 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaka (JP 63062738) in view of Jackson (New cold-curing high performance UV system) and Clearly (USPN 6,616,355).

With respect to claims 1, 9, 12, 27, 31, 34, 48, 39, 50, 51, Nagasaka discloses:

- Substrate support defining a substrate supporting plane (fig.1: element 1, 2)
- At least one ink jet print head on the carriage (Fig.1: element 5)
- Moving a print head carriage having an ink jet print head thereon approximately parallel to a substrate (Fig.1)
- Jetting ink from the heads across the predetermined distance onto the surface of the substrate (fig.1)
- at least one UV curing head on the carriage sufficiently close to the ink jet print head and the UV curing head being configured to emit sufficient UV energy to substantially cure the ink jetted onto the substrate(fig.1, Abstract)

- two UV curing heads (fig.1: element 10), one positioned on the carriage at each side of the print heads (5) so that one leads the print head and one trails the print head as the carriage moves on in either of two opposite directions on the track
- controller is operate to activate the UV curing head and the UV curing head is moveable relative to the plane and maintain focus of UV light from the printhead on ink jetted onto the surface of the substrate (abstract).

However, Nagasaka fails to teach cold UV curing head and cold UV includes a limited bandwidth UV source, a reflector, power consumption of at least 200 watts per linear inch and vacuum source to apply a vacuum to the substrate to help maintain a distance between the substrate and a print head.

Jackson teaches using cold UV to curing ink (page 8), reflector (page 8, figure 1), and power consumption of at least 200 watts per linear inch (Page 8: column 3). Since Jackson teaches using the cold UV to cure the ink, the substrate have to deform as it move in direction of print head and since the combination teach the UV cold, the same UV light would achieve the same effect such as to freeze the ink on the surface of the substrate without impinging radiation that would materially deform the substrate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made as modify to use cold UV as taught as Jackson. The motivation of doing so is to improve product quality.

Clearly teaches vacuum source to apply a vacuum to the substrate to help maintain a distance between the substrate and a print head (Column 3: line 50-55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply a vacuum to the substrate as taught by Clearly. The motivation of doing so is to prevent the substrate fall off the platen/support member.

2. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaka (JP 63062733) in view of Clearly (USPN 6,616,355) and Jackson (New cold-curing high performance UV system) as applied to claim 31 above, further in view of Anon (Taming UV temperature).

However, Clearly (355) fails the power consumption of at least 125 watts per linear inch.

Anon teach the power consumption of at least 125 watts per linear inch (page 19).

It would have been obvious to one having ordinary skill in the art at the time the invention was made as modify to have the power consumption of at least 125 watts per linear inch as taught by Anon. The motivation of doing is to obtain more economy curing.

3. Claims 45, 47, 48, 52 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaka (JP 63062738) in view of Jackson (New cold-curing high performance UV system), Clearly (USPN 6,616,355) and Rae (GB 2,258,296).

With respect to claim 45,47,48, 52 and 53, Nagasaka discloses:

Art Unit: 2853

- A print head carriage (fig.1)
- A printhead coupled to and movable with the carriage to different positions with respect to the deformable substrate and configured to jet ink onto the substrate (fig.1: element 5, 1)
- two UV curing head on the carriage sufficiently close to the ink jet print head and the UV curing head being configured to emit sufficient UV energy to substantially cure the ink jetted onto the substrate(fig.1,
- Moving a print head carriage having an ink jet print head thereon approximately parallel to a substrate (Fig.1)

However, Nagasaka fails to teach using the cold UV, reflector, cooling system configured to take heat away from the curing head, filtering undesired energy, vacuum for holding the substrate and emit light of at least 200 watts per linear inch.

Jackson teaches using cold UV to curing ink (page 8), reflector (page 8, figure 1), and power consumption of at least 200 watts per linear inch (Page 8: column 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made as modify to use cold UV as taught as Jackson. The motivation of doing so is to improve product quality.

Clearly teaches vacuum source to apply a vacuum to the substrate to help maintain a distance between the substrate and a print head (Column 3: line 50-55).

It would have been obvious to one have ordinary skill in the art at the time the invention was made to apply a vacuum to the substrate as taught by Clearly. The motivation of doing so is to prevent the curling of the substrate.

Rae teaches reflector (fig.1: element 1), cooling system (element 8) configured to take heat away from the curing head, filtering undesired energy.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the cooling system as taught by Rae. The motivation of doing so is enable the lamp to be operated at lower outputs without loss of stability.

4. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaka (JP 63062738) in view of Jackson (New cold-curing high performance UV system) and Clearly (USPN 6,616,355) as applied to claim 31 above, further in view of Pelletier (USPN 5,447,758).

The combination of Nagasaka, Jackson and clearly disclose the claimed invention except that printing on the substrate such that printing on the paper instead of cardboard. Pelletier shows that paper and cardboard is an equivalent structure known in the art. Therefore, because paper and cardboard were art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute cardboard for paper for the same purpose such as using as a printing medium.

5. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaka (JP 63062738) in view of Jackson (New cold-curing high performance UV system) and Clearly (USPN 6,616,355) and Rae (GB 2,258,296) as applied to claim 45 above, further in view of Pelletier (USPN 5,447,758).

The combination of Nagasaka, Jackson, clearly and Rae disclose the claimed invention except that printing on the substrate such that printing on the paper instead of cardboard. Pelletier shows that paper and cardboard is an equivalent structure known in the art. Therefore, because paper and cardboard were art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute cardboard for paper for the same purpose such as using as a printing medium.

Allowable Subject Matter

6. Claims 36, and 37 are allowed.
7. Claims 35 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 35 and 40 are allowable over prior art of record because at least prior art have not been found to anticipate or teach a fluid cooling system coupled to the reflector.

Response to Arguments

8. Applicant's arguments filed 7/20/06 have been fully considered but they are not persuasive.

Applicant argues about US. Patent 6,575,093. This argument is not persuasive because this US. Patent is not in the rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ly T. TRAN whose telephone number is 571-272-2155. The examiner can normally be reached on M-F (7:30am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 2853

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LT

October 5, 2006



STEPHEN MEIER
SUPERVISORY PATENT EXAMINER